杰力科技股份有限公司
Excelliance MOS Corporation

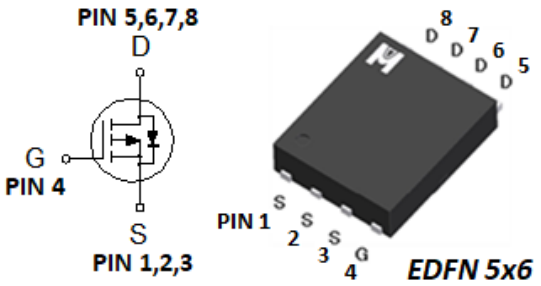
# EMP26P03H

**Single P-Channel Logic Level Enhancement Mode Field Effect Transistor**

**▪Product Summary:**

| | P-CH |
|---|---|
| BVDSS | -30 V |
| $R_{DSON\ (MAX.)}$@$V_{GS}$=-10V | 2.5 mΩ |
| $R_{DSON\ (MAX.)}$@$V_{GS}$=-4.5V | 4.0 mΩ |
| $I_D$ @$T_C$=25°C | -230 A |

**▪ Pin Description:**




Single P Channel MOSFET
UIS, Rg 100% Tested
RoHS & Halogen Free & TSCA Compliant

**▪ABSOLUTE MAXIMUM RATINGS ($T_C$ = 25 °C Unless Otherwise Noted)**

| PARAMETERS/TEST CONDITIONS | | SYMBOL | LIMITS | UNIT |
|---|---|---|---|---|
| Gate-Source Voltage | | $V_{GS}$ | ±25 | V |
| Continuous Drain Current | $T_C$ = 25 °C | $I_D$ | -230 | A |
| | $T_C$ = 100 °C | | -146 | |
| Continuous Drain Current | $T_A$ = 25 °C | $I_D$ | -24 | |
| | $T_A$ = 70 °C | | -19 | |
| Pulsed Drain Current[1] | | $I_{DM}$ | -453 | |
| Avalanche Current | | $I_{AS}$ | -90 | |
| Avalanche Energy | L = 0.1mH | EAS | 405 | mJ |
| Repetitive Avalanche Energy[2] | L = 0.05mH | EAR | 202.5 | |
| Power Dissipation | $T_C$ = 25 °C | $P_D$ | 201.6 | W |
| | $T_C$ = 100 °C | | 80.6 | |
| Power Dissipation | $T_A$ = 25 °C | $P_D$ | 2.4 | W |
| | $T_A$ = 70 °C | | 1.5 | |
| Operating Junction & Storage Temperature Range | | $T_j$, $T_{stg}$ | -55 to 150 | °C |

▪ 100% UIS testing in condition of VD=25V, L=0.1mH, VG=10V, IL=54A, RG=25Ω,Rated VDS=-30V P-CH

**▪THERMAL RESISTANCE RATINGS**

| THERMAL RESISTANCE | | SYMBOL | TYPICAL | MAXIMUM | UNIT |
|---|---|---|---|---|---|
| Junction-to-Case | | $R_{\theta JC}$ | | 0.62 | °C/W |
| Junction-to-Ambient[3] | t≦10s | $R_{\theta JA}$ | | 19 | |
| | Steady-State | $R_{\theta JA}$ | | 53 | |

[1]Pulse width limited by maximum junction temperature.

[2]Duty cycle < 1%

[3]The value of $R_{\theta JA}$ is measured with the device mounted on 1in$^2$ FR-4 board with 2oz. Copper, in a still air environment with $T_A$ =25°C.

[4]Guarantee by Engineering test

## ▪ ELECTRICAL CHARACTERISTICS ($T_J$ = 25 °C, Unless Otherwise Noted)

| PARAMETER | SYMBOL | TEST CONDITIONS | LIMITS | | | UNIT |
|---|---|---|---|---|---|---|
| | | | MIN | TYP | MAX | |
| **STATIC** | | | | | | |
| Drain-Source Breakdown Voltage[4] | $V_{(BR)DSS}$ | $V_{GS}$ = 0V, $I_D$ = -250μA | -30 | | | V |
| Gate Threshold Voltage[4] | $V_{GS(th)}$ | $V_{DS}$ = $V_{GS}$, $I_D$ = -250μA | -1.2 | -1.6 | -2.5 | V |
| Gate-Body Leakage[4] | $I_{GSS}$ | $V_{DS}$ = 0V, $V_{GS}$ = ±20V | | | ±100 | nA |
| | | $V_{DS}$ = 0V, $V_{GS}$ = ±25V | | | ±500 | nA |
| Zero Gate Voltage Drain Current[4] | $I_{DSS}$ | $V_{DS}$ = -30V, $V_{GS}$ = 0V | | | -1 | μA |
| | | $V_{DS}$ = -30V, $V_{GS}$ = 0V, $T_J$ = 125 °C | | | -25 | μA |
| On-State Drain Current[1] | $I_{D(ON)}$ | $V_{DS}$ = -5V, $V_{GS}$ = -10V | -230 | | | A |
| Drain-Source On-State Resistance[1,4] | $R_{DS(ON)}$ | $V_{GS}$ = -10V, $I_D$ = -25A | | 2.2 | 2.5 | mΩ |
| | | $V_{GS}$ = -4.5V, $I_D$ = -20A | | 3.0 | 4.0 | mΩ |
| Forward Transconductance[1] | $g_{fs}$ | $V_{DS}$ = -5V, $I_D$ = -25A | | 110 | | S |
| DYNAMIC | | | | | | |
| Input Capacitance[5] | $C_{iss}$ | $V_{GS}$ = 0V, $V_{DS}$ = -15V, f = 1MHz | | 9280 | | pF |
| Output Capacitance[5] | $C_{oss}$ | | | 1290 | | pF |
| Reverse Transfer Capacitance[5] | $C_{rss}$ | | | 758 | | pF |
| Gate Resistance[4,5] | $R_g$ | f = 1MHz | | 2.6 | | Ω |
| Total Gate Charge[1,2,5] | $Q_g$($V_{GS}$=-10V) | $V_{DS}$ = -15V, $V_{GS}$ = 10V, $I_D$ = -25A | | 178 | | nC |
| | $Q_g$($V_{GS}$=-4.5V) | | | 91 | | nC |
| Gate-Source Charge[1,2,5] | $Q_{gs}$ | | | 28 | | nC |
| Gate-Drain Charge[1,2,5] | $Q_{gd}$ | | | 42 | | nC |
| Turn-On Delay Time[1,2,5] | $t_{d(on)}$ | $V_{DS}$ = -15V, $V_{GS}$ = -10V, $I_D$ = -5A , Rg = 3Ω | | 10 | | nS |
| Rise Time[1,2,5] | $t_r$ | | | 18 | | nS |
| Turn-Off Delay Time[1,2,5] | $t_{d(off)}$ | | | 189 | | nS |
| Fall Time[1,2,5] | $t_f$ | | | 100 | | nS |
| **SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS** | | | | | | |
| Continuous Current | $I_S$ | | | | -230 | A |
| Pulsed Current[3] | $I_{SM}$ | | | | -453 | A |
| Forward Voltage[1,4] | $V_{SD}$ | $I_F$ = 25A, $V_{GS}$ = 0V | | | -1.2 | V |
| Reverse Recovery Time[5] | $t_{rr}$ | $I_F$ = 25A, $dI_F/dt$ = 100A / μS | | 26 | | nS |
| Peak Reverse Recovery Current[5] | $I_{RM(REC)}$ | | | 1.1 | | A |
| Reverse Recovery Charge[5] | $Q_{rr}$ | | | 16 | | nC |

[1]Pulse test : Pulse Width ≦ 300 usec, Duty Cycle ≦ 2%.

[2]Independent of operating temperature.

[3]Pulse width limited by maximum junction temperature.

[4]Guarantee by FT test Item

[5]Guarantee by Engineering test

**EMC will review datasheet by quarter, and update new version.**

## ▪TYPICAL CHARACTERISTICS

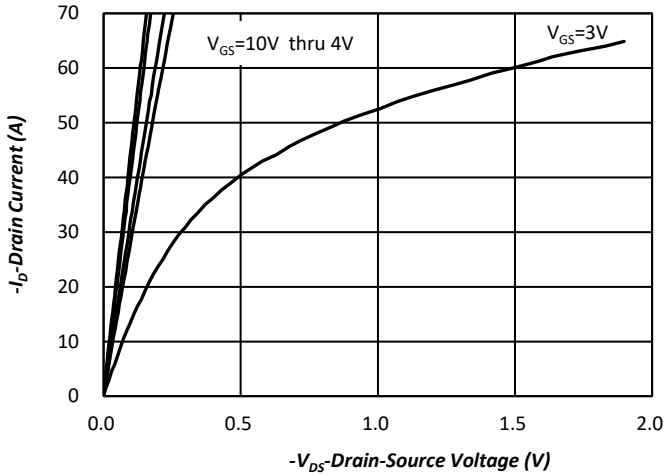



**Fig.1 Typical Output Characteristics**

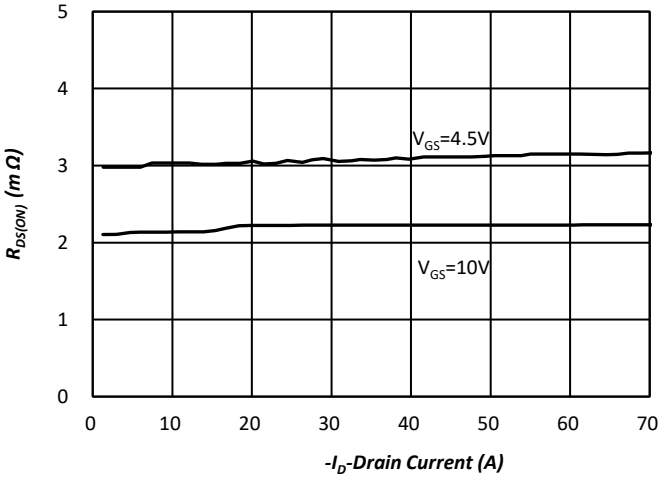



**Fig.2 On-Resistance Variation with Drain Current and Gate Voltage**

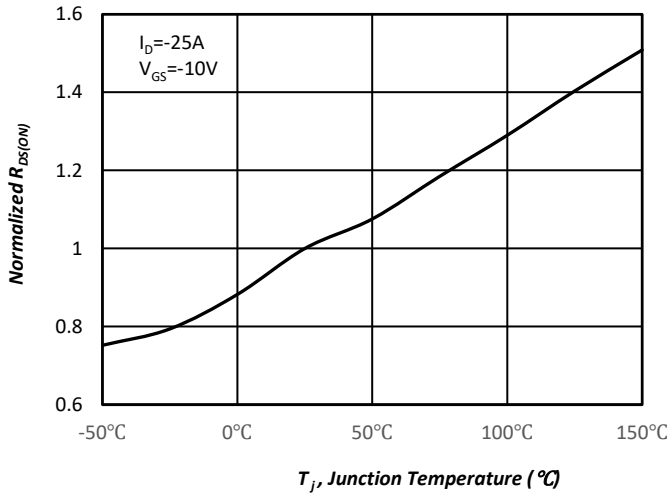



**Fig.3 Normalized On-Resistance v.s. Junction Temperature**

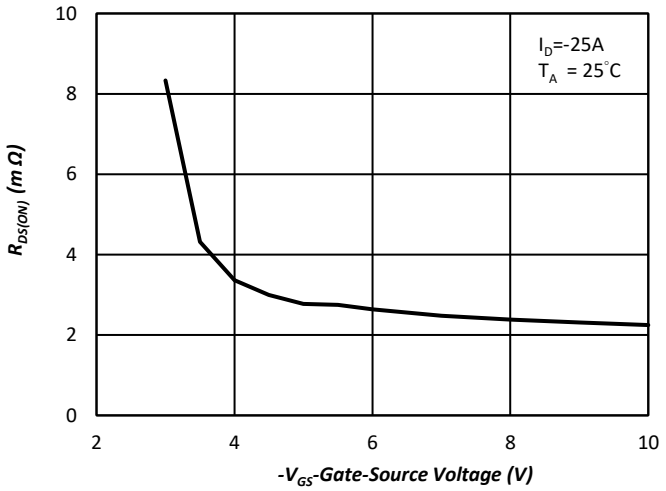



**Fig.4 On-Resistance v.s. Gate Voltage**

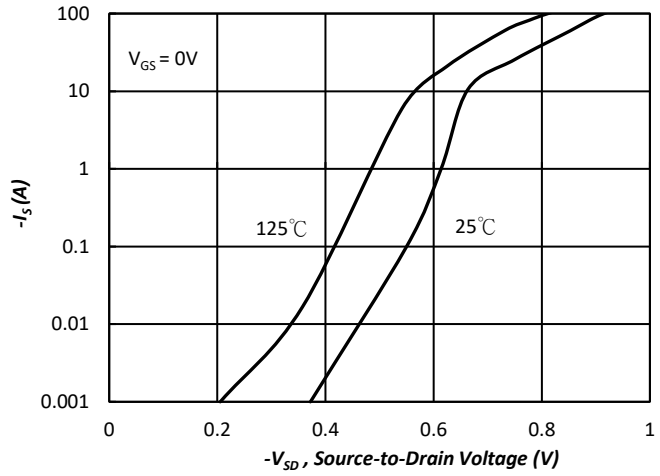



**Fig.5 Forward Characteristic of Reverse Diode**

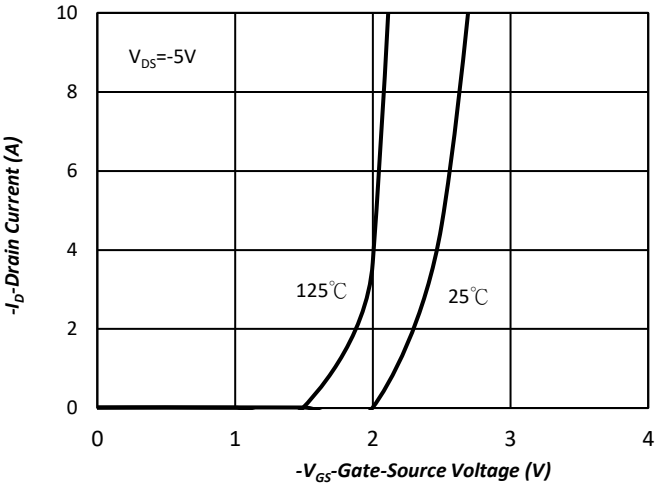



**Fig.6 Transfer Characteristics**

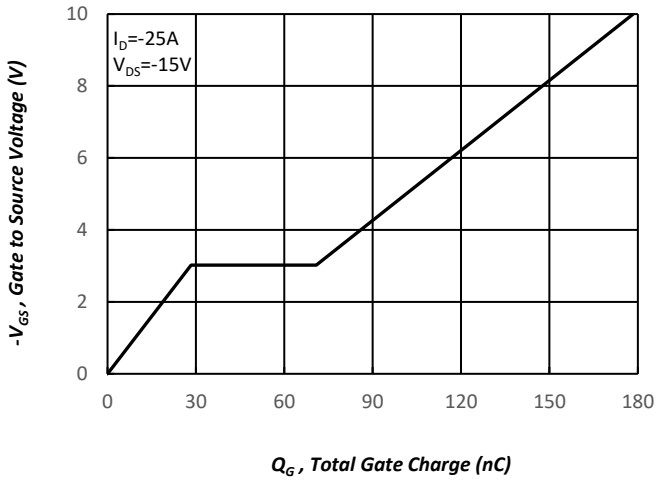



**Fig.7 Gate Charge Characteristics**

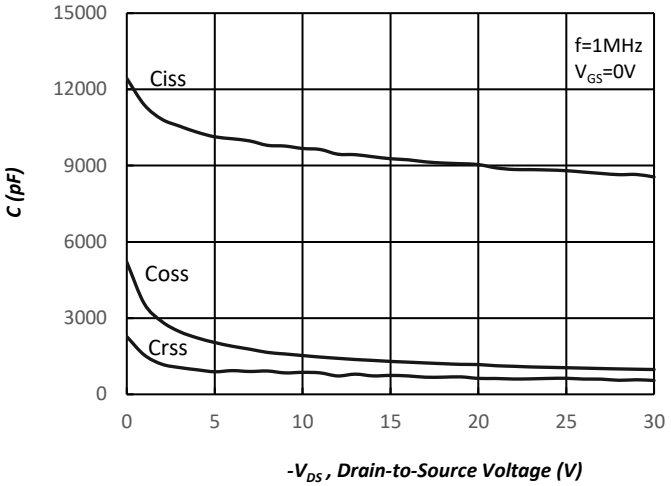



**Fig.8 Typical Capacitance Characteristics**

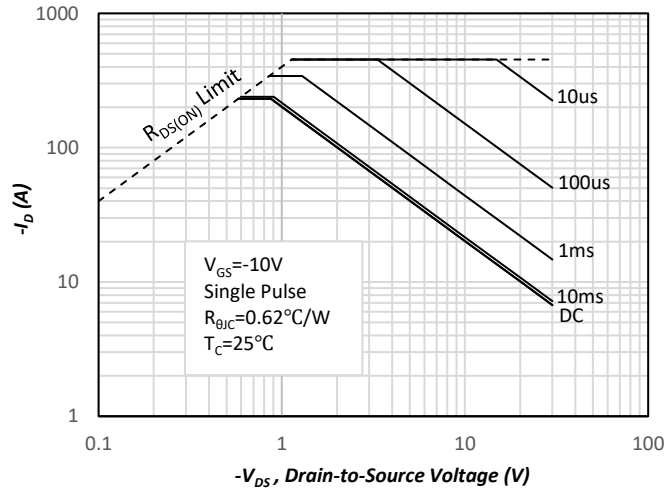



**Fig 9. Maximum Safe Operating Area**

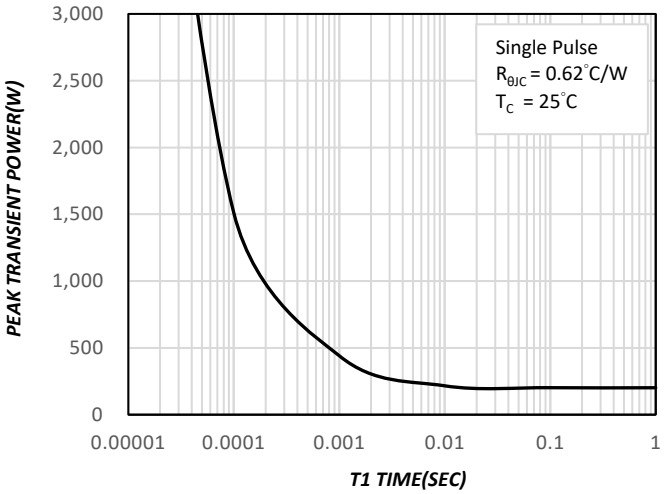



**Fig 10. Single Pulse Maximum Power Dissipation**

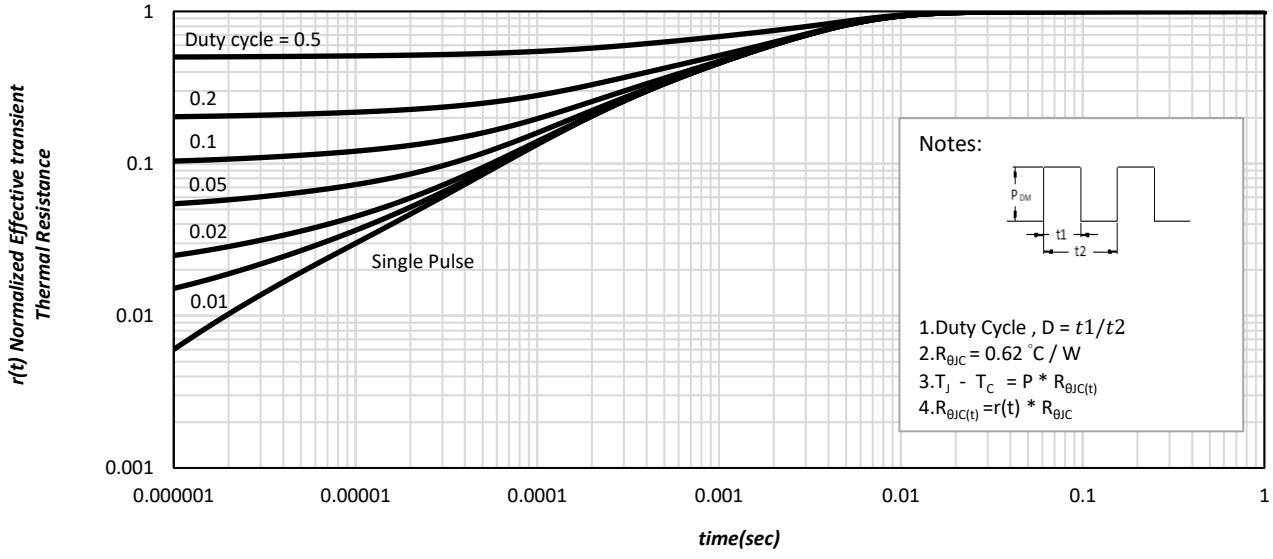
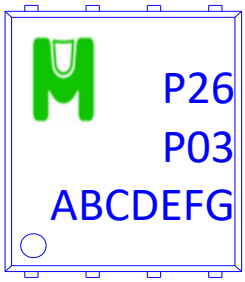



**Fig 11. Effective Transient Thermal Impedance**

**Ordering & Marking Information:**

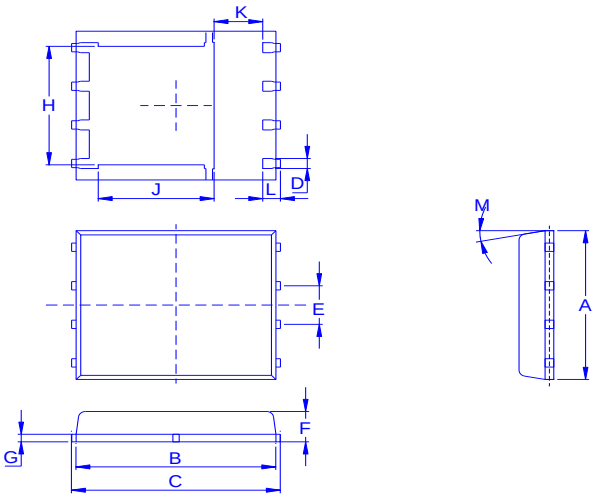
Device Name:EMP26P03H for EDFN 5x6



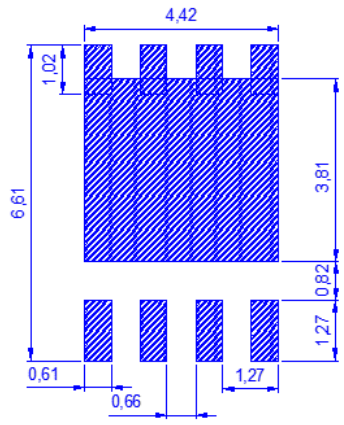

P26P03: Device Name

ABCDEFG: Date Code
A: Assembly House
B: Year(A:2008 B:2009 C:2010….)
C: Month(A:01 B:02 C:03 D:04 E:05 F:06 G:07 H:08 I:09 J:10 K:11 L:12)
DEFG: Serial No.

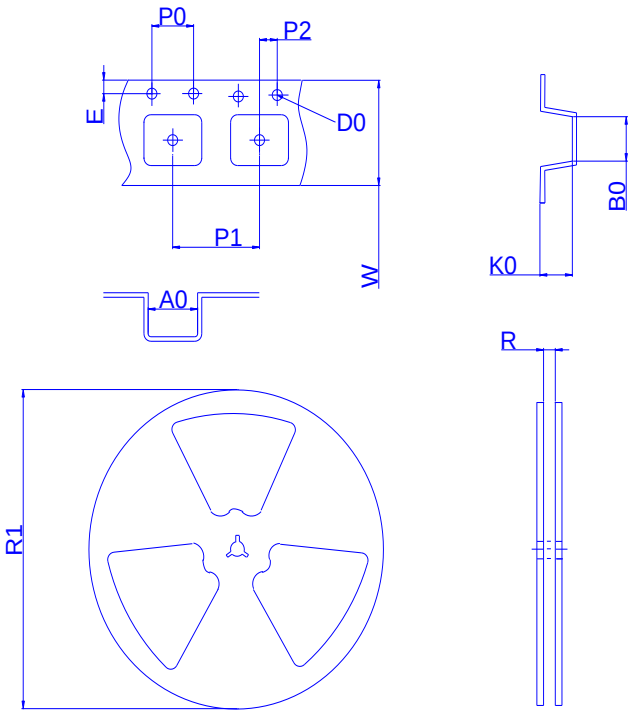
Outline Drawing

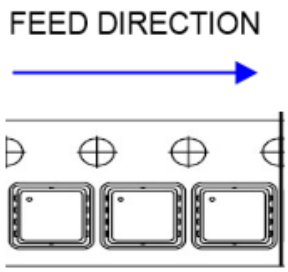



| Dimension | A | B | C | D | E | F | G | H | J | K | L | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Min. | 4.8 | 5.55 | 5.9 | 0.3 | 1.17 | 0.85 | 0.15 | 3.61 | 3.18 | 1 | 0.38 | 0° |
| Typ. | 4.9 | 5.7 | 6 | 0.4 | 1.27 | 0.95 | 0.2 | 3.87 | 3.44 | 1.2 | 0.4 | |
| Max. | 5.4 | 5.85 | 6.15 | 0.51 | 1.37 | 1.17 | 0.34 | 4.31 | 3.78 | 1.39 | 0.71 | 12° |



◆ **Tape&Reel Information:2500pcs/Reel(Dimension in millimeter)**




| Package | EDFN5X6 |
|---|---|
| Reel | 13” |
| Device orientation |  |



Dimension in mm

| Dimension | Carrier tape | | | | | | | | | Reel | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | A0 | B0 | D0 | E | K0 | P0 | P1 | P2 | W | R | R1 |
| Typ. | 6.4 | 5.3 | 1.5 | 1.8 | 1.6 | 4 | 8 | 2 | 12 | 12.4 | 330 |
| ± | 0.2 | 0.2 | 0.1 | 0.1 | 0.6 | 0.1 | 0.1 | 0.1 | 0.3 | 2 | 2 |